SUBJECT GUIDE Academic year 2020-2021

BROMATOLOGÍA

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
Science of Food	Food Science	2º	1	6	CORE

LECTURER(S)	Postal address, telephone nº, e-mail address
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DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT	http://www.ugr.es/~nutricion/pdf/tutorias20 21.pdf
Degree in Science and Food Technology	

PREREQUISITES and/or RECOMMENDATIONS (if necessary)

Having studied the subjects of General Chemistry, Biochemistry, Physiology, Biology, Chemistry and Biochemistry of food, Commodity Production, Unit Operations in Industry

BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ¿??)

- Classification and descriptive study of the composition, properties and nutritional value of foods of animal origin.
- Composition and properties of foods: canned, prepackaged and precooked dishes. Food, cultural identity and social differentiation

GENERAL AND PARTICULAR ABILITIES

CT1. Ability to express themselves properly in Spanish in their disciplinary field.
CT2. Problem solving.
CT3. Teamwork.
CT4. Ability to apply theoretical knowledge to practice.
CT7. Capacity for analysis and synthesis.
CT8. Critical Thinking.
CT9. Develop skills introduction to research.
CT10.Motivation for quality.
CT11.Capacity for organization and planning
CT12.Ability to manage information.
CT14.Sensitivity to environmental issues.
CE2.To meet the models of food production, composition and physical properties, physic-chemical and chemical to determine its nutritional value and functionality.
CE3. To learn the techniques and food analysis to ensure optimal conditions for human consumption.
CE11. To understand and appreciate that food is one of the cornerstones of the cultural identity of a society.
CE15. To inform, train and give advice to legal, scientific and technical public administration, the food industry and consumers in order to design intervention strategies and training in the field of science and food technology.

OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)

- Use knowledge gained about the chemical composition and properties of food, food analysis, detection of fraud and its alterations, processing, preservation and evaluation of the quality of food of animal origin.
- Ability to describe and explain the changes in food due to the processes of production, conservation and deterioration.

DETAILED SUBJECT SYLLABUS

THEORETICAL AGENDA:

•Topic 1. Food science. Concept. Goals. Current situation and prospects. Food, nutrient and food products concept. Legal definitions. Spanish food legislation. Spanish Food Code. Community and International Directives.

•Topic 2. Culture and food. Sociocultural functions of food. Stages and historical evolution of food. Current situation and future perspectives: biotechnology and nutrigenomics.

•Topic 3. Ultra-processed foods and new foods: functional foods and transgenic foods. Concepts and general characteristics. Elaboration techniques. Practical examples.

•Topic 4. Food preservation by physical methods and its implications in food science. General principles. Physical preservation methods: application of cold and heat to food preservation. Desiccation, dehydration and lyophilization. Ionizing radiation. Pressurization. Modified atmospheres.

•Topic 5. Food preservation by chemical methods and their implications in food science. Chemical conservation methods. Salting. Cured. Smoked. Pickled. Marinated and pickled. Glazed and coated. Acidification.

•Topic 6. Meat. Introduction. Legal and bromatological definitions. Pig, beef and sheep slaughter lines. Bird slaughter lines. Commercial classification and quality criteria. Labelling.

•Topic 7. Bromatological aspects of meat. Implications of post-mortem changes in meat maturation, chemical composition, organoleptic properties and nutritional value.

•Topic 8. Meat processing technology. Meat Products and Derivatives: Legal classifications, treatments and process technology. Nutritional value.

•Topic 9. Fish: Species for consumption. Seafood, shellfish and crustaceans for consumption Meaning in food. Production and Consumption Data. Composition. Nutritional value. Quality legal, analytical, sensory and health criteria. Main degradation rates. Presentation and conservation forms: Legal definitions, process technology. Fish byproducts. Surimi.

•Topic 10. Egg. Definition and importance in food. Structure and chemical composition. Nutritional value. Legal, analytical and sanitary criteria of quality and classification. Egg products: Definitions and processes.

•Topic 11. Milk: Definitions, types and importance in food. Production and consumption. Structure and chemical composition. Nutritional value. Breast milk, nutritional importance.

•Topic 12. Milk processing. Basic technological operations: collection, sanitation, homogenization, conservation methods.

•Topic Unit 13. Types of milk: drinking milk, preserved (evaporated. Condensed and powdered). Fermented and modified milk. Probiotic and prebiotic concept. Chemical and biochemical modifications, nutritional applications, types, technological manufacturing and marketing processes.

•Topic 14. Dairy Products: Cream. Butter. Curd. Ice creams. Dairy desserts, cheeses. Legal definitions. Classifications. Chemical composition and nutritional value. Nutritional importance. Legal, analytical,

sensory and health criteria. Technological processes of elaboration, conservation and commercialization. Dairy by-products: production and applications.

PRACTICAL AGENDA:
Seminars / Workshops
• Research in the area of food science applied to food technology through consultations in different bibliographic sources (bibliography of the subject, books and magazines in the food sector) such as databases in the food and scientific fields (Pubmed, Web of Science, Scopus) Laboratory practices
Practice 1. Commercial quality of fish. Determination of the degree of freshness. Determination of total volatile basic nitrogen.
Practice 2. Commercial quality of the egg. Determination of the degree of freshness by visual examination and ovoscope. Legal classification of eggs.
Practice 3. Analysis of sausages. Determination of moisture content. Nitrate and nitrite analysis by spectrophotometry.
Practice 4. Analysis of milk. Density determination. Determination of lactose content (official method of chloramine T), acidity analysis. Determination of milk stability to heat. Determination of peroxidase, phosphatase and reductase activity.
Field Practices
Visit Meat and / or Dairy Industries

READING

KEY REFERENCES

- MADRID-VICENTE, A. Ingeniería y producción de alimentos. Ed. AMW Ediciones. 2016
- MIRANDA-ZAMORA, W.R. Manual de tratamiento térmico y envasado de alimentos. Ed. AMW Ediciones. 2017
- GIL, A. Tratado de Nutrición. TOMO II. Composición y Calidad Nutritiva. 2005.
- ASTIASARAN y MARTINEZ. Alimentos Composición y propiedades. Ed. McCraww-Hill. Interamericana. 2000.
- BARROS, C. (Recopilador). Legislación Alimentaria. Alimentaria. Madrid. 1976- Actualizado con CD
- BELITZ. Química de los Alimentos. 2ª Edición. Ed. Acribia. 1997.
- BELLO GUTIERREZ, J. Ciencia Bromatológica. Ed. Diaz de Santos. 2000.
- BRENNAN, J. Las Operaciones de la Ingeniería de los Alimentos. 3ª Edición. Ed. Acribia. 1998.
- CENZANO. Nuevo Manual de Industrias Alimentarias.1993.
- CODIGO ALIMENTARIO ESPAÑOL. Ed. Textos legales. 1988.
- CHEFTEL, J.G. y col. Introducción a la bioquímica y tecnología de los alimentos.2000.
- FEHLEABER, K. Higiene Veterinaria De Los Alimentos. Ed. Acribia. 1998.
- FELLOWS, P. Tecnología del Procesado de Los Alimentos. Principios y Prácticas. Ed. Acribia. Zaragoza. 1993.
- FENNEMA, O. R. Química de los Alimentos. Ed. Acribia. Zaragoza. 2000.
- HERNÁNDEZ, M. Tratado de Nutrición. Ed. Díaz de Santos.1999.
- HORST DIETER. Fundamentos de Tecnología de los Alimentos. Ed. Acribia. 2001
- LINDER, M.C. Nutrición. Aspectos Bioquímicos. EUNSA. 1996.
- MADRID, A. Reglamentaciones técnico sanitarias del sector alimentario. Ed. Madrid. 1988.
- MATAIX VERDU, J. Nutrición y Alimentación Humana. I. Nutrientes y Alimentos. Ed. Ergon. 2002.

- ORDOÑEZ y col. Tecnología de los alimentos. Vol. I y II. 1998.
- PAMPLONA, J.D. Enciclopedia De Los Alimentos Y Su Poder Curativo. 3 Tomos.
- POTTER y HOTCHKISS. Ciencia de los Alimentos. Ed. Acribia. 1999.
- PRIMO YUFERA. Química de los Alimentos. Ed. Síntesis. 1998.
- RANGEN, M.D. Manual De Industrias De Los Alimentos. Ed. Acribia. 1993.
- RODRÍGUEZ, Fº (Editor). Ingeniería de la Industria Alimentaria. Tomo II y III. Ed. Síntesis. 2002.
- VOLLMER, G. Elementos de Bromatología descriptiva. Ed. Acribia. 1999

RECOMMENDED INTERNET LINKS

- http://www.nutricioncomunitaria.org/
- http://www.senba.es/
- http://www.sennutricion.org/
- http://www.seedo.es/
- http://www.aecosan.msssi.gob.es/
- http://portalfarma.com
- http://fen.org.es (Spanish Nutrition Foundation)